forming on each of the two covers a barrier material which is a barrier to water vapor;

mounting an RFID transceiver circuit and a battery between the two covers; and

sealing the two covers together along a peripheral contour which completely encircles the transceiver and battery.

REMARKS

Claims 1–24 are canceled. The only claims now pending are newly added claims 25–42.

The present divisional application is filed to resubmit claims 25 and 36–48 that were withdrawn from the parent application SN 08/137,677 in response to the restriction requirement made in the 10/18/95 office action.

Newly added claims 25–30 correspond to claims 36–41 of the parent application. Newly added claim 31 corresponds to claim 25 of the parent application. Newly added claims 35–41 correspond to claims 42–48 of the parent application.

Claims 25–30

Claims 25–30 are directed to an RFID transceiver circuit and battery mounted between two sheets of polymer film having a layer of a barrier material which is a barrier to water vapor. The claimed invention enables an RFID transceiver to be fabricated in an extremely thin enclosure consisting only of two sheets of film, while still protecting the battery from water vapor. Many battery materials, such as lithium, are easily destroyed through exposure to moisture.

Packaging the RFID transceiver within polymer film is advantageous because such film can be very thin and light, which is especially important for making RFID transceivers small enough for use as mailing labels and identification badges. However, a thin polymer film typically is somewhat permeable to water vapor and other gases which will destroy commonly used battery materials such as lithium compounds. The deposition of a barrier layer over the polymer film allows the use of a very thin polymer film while still protecting the battery.

Claims 25–30 are apparatus claims corresponding to method claims 26–35 allowed in parent application SN 08/947,681, now U.S. Patent 5,779,839. Claims 25–30 are allowable for the same reason given by the Examiner as his reason for allowing the corresponding method claims: "None of the prior art references, alone or in combination, teaches or suggests the particularly claimed process of making a radio frequency identification transceiver (RFID) wherein a material which is a barrier to water vapor is deposited on each of two polymeric film covers; and the covers are sealed together along a peripheral contour."

Claims 29–30 are more specifically directed to the above-described apparatus in which the

barrier is applied to both sides of the polymer film. The inventors have found that applying barrier layer on both sides of the polymer film typically allows the use of much thinner barrier layers, because any pinholes in one barrier layer are unlikely to be aligned with pinholes in the other barrier layer. None of the references suggests the deposition of a barrier layer on both sides of a polymer film. Claim 30 further recites the surprisingly thin (100–400 Å) layer that can effectively function as a barrier to water vapor and other gases when the barrier covers both sides of the polymer film.

Accordingly, claims 25–30 are allowable.

Claim 31

Claim 31 is directed to an RFID transceiver circuit and battery mounted between two covers, wherein at least one of the two covers includes an inner layer which is a sheet of dielectric film and an outer layer which is both an electrical conductor and a barrier to water vapor. This invention is advantageous because many metals make excellent barriers, yet would appear to be unsuitable for a typical RFID transceiver because they would function as an RF shield to block RF signals from being received or transmitted by an antenna enclosed by the covers. The invention overcomes this apparent unsuitability by making the barrier the antenna for the transceiver by capacitively coupling it to the transceiver circuit.

None of the prior art discloses a transceiver enclosure having an electrically conductive barrier layer on a sheet of dielectric film, wherein the barrier material is capacitively coupled to the transceiver circuit to function as an antenna. Therefore, claim 31 is allowable.

Claim 32

Claim 32 is similar to claim 31, but without the recitation of the battery and of the electrically conductive outer layer being a barrier to water vapor. None of the prior art discloses a transceiver enclosed by a cover having an electrically conductive outer layer over an inner layer of dielectric film, wherein the electrically conductive outer layer is capacitively coupled to the transceiver circuit to function as an antenna. Therefore, claim 32 is allowable.

Claims 33–34

Claims 33–34 are method claims similar to apparatus claims 31–32, respectively, and they are allowable for the same reasons.

Claims 35–39

Claims 35–39 are directed to a method and apparatus for storing a plurality of RFID transceivers in an RF shielded enclosure so that selected ones of the transceivers can be removed while

maintaining the RF shielding of the others. While the transceivers are stored in the shielded enclosure, the RF shielding advantageously protects the transceivers from receiving RF signals that otherwise could activate the transceivers and run down their batteries. None of the prior art discloses any RF shielded enclosure for storing and dispensing RF transceivers. Therefore, claims 35–39 are allowable.

Claim 40

Claim 40 is directed to a method of manufacturing a plurality of RFID transceivers by a process in which the transceivers are mounted between two sheets of polymer film which are unrolled from roll stock, and then rolled up again after the transceivers are mounted and sealed between them. The process is especially efficient for the continuous production and storage of large quantities of transceivers. None of the prior art discloses such an unrolling and rolling process. In the Hara and Queyssac references, the circuitry is mounted on rigid substrates which could not be rolled up, in contrast with Applicants' use of a thin film. Therefore, claim 40 is allowable.

Claim 41

Claim 41 is directed to a method of manufacturing an RFID transceiver by mounting a transceiver on a sheet of polymer film, folding the film in half to enclose the transceiver, and then sealing the two halves together. This method advantageously simplifies the manufacturing process by avoiding the need to align two separate sheets. None of the prior art discloses any process in which a transceiver or other circuit is mounted on a polymer film which is folded in half. Accordingly, claim 41 is allowable.

Claim 42

Claim 42 is identical to allowed claim 26 of the parent application SN 08/947,681 (now U.S. Patent 5,779,839), except that the term "deposited" is now changed to "formed", and the final "whereby" paragraph of allowed claim 26 is now deleted. Consequently, the method of claim 39 encompasses processes other than deposition for forming the barrier layer. Claim 39 is allowable for the same reasons that claim 26 of the parent application was allowed.

Respectfully submitted,

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